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ABSTRACT

The development of the University of Washington freshman Admission Index (AI) is reviewed. The AI is a weighted linear combination of a student's overall high school grade point average and test scores from a standard college entrance examination of the verbal-quantitative type. The existing equation for computation of the AI using the Washington Pre-College Test is given. New equations are presented for deriving the AI from scholastic Aptitude Test or American College Test scores. (Author/RC)

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Computing the University of Washington Freshman Admission's Index Using the Scholastic Aptitude Test or American College Test

Virginia A. de Wolf

This report briefly reviews the development of the University of Washington freshman Admission's Index, a weighted linear combination of a student's overall high school grade point average and test scores from a standard college entrance examination of the verbal-quantitative type. The existing equation for computation of the Index using the Washington Pre-College Test is given. New equations are presented for deriving the Index from Scholastic Aptitude Test or American College Test scores.

Educational Assessment Center Project: 549

Computing the University of Washington Freshman Admission's Index Using the Scholastic Aptitude Test or the American College Test

Virginia A. de Wolf

Due to a spiraling number of applicants and a comparatively limited number of openings in the freshman class, the University of Washington (UW) inaugurated a new admission's policy for entrance into this class beginning Autumn Quarter 1974. After Summer Quarter 1974 high school (HS) students applying for admissions would be required to submit not only their HS transcript but also test scores from one of the standard college entrance examinations of the verbal-quantitative type, such as the Washington Pre-College (WPC) Test battery, the Scholastic Aptitude Test (SAT), or the American College Test (ACT). A weighted linear combination of each student's overall HS grade point average (GPA) and test scores were used to compute the applicant's UW Admission's Index (AI). Applicants would then be ranked according to their AI and offers of admission made from the top until the freshman class was filled. For a more detailed presentation of the development of the AI see Lunneborg (Note 1).

In Lunneborg, the basic equation to be used in computing the AI was given as

$$AI = (15.8)(\text{overall HS GPA}) + (0.27)(\text{sum of verbal and quantitative scores}) - (10.71).$$

He noted in the text that this equation was derived solely using data from UW freshmen who had taken the WPC battery in HS. The WPC test battery is composed of nine subtests: Vocabulary, English Usage, Spelling, Reading Comprehension, Quantitative Skills, Applied Mathematics, Mathematics Achievement, Spatial Ability, and Mechanical Reasoning. The Verbal Composite (VC) is a weighted average of the Vocabulary, English Usage, Spelling and Reading Comprehension test

scores and the Quantitative Composite (QC) a weighted average of scores on the Quantitative Skills, Applied Mathematics, and Mathematics Achievement tests (Washington Pre-College Testing Program, Note 2). Rewriting this equation then strictly in terms of the WPC composite scores, one would get

AI = (15.8)(overall HS GPA) + (0.27)(WPC VC+QC) - (10.71).

Although the vast majority of freshmen entering the UW in Autumn 1974 presented WPC test scores (79%), a reasonable proportion of entrants presented either the SAT or ACT (16%) as de Wolf has noted elsewhere (Note 3). To accomodate those applicants with SAT or ACT scores two rough assumptions were made about the correspondence between scores from these programs and the WPC. Firstly, it was assumed that the SAT total (sum of Verbal and Mathematical) would be directly equivalent to the sum of WPC Verbal and Quantitative Composite scores. Secondly, it was assumed that the normative population (distribution of talent) for the ACT was the same as for WPC. These assumptions led to computational formulae for AI based on scores from these two programs. It was recognized, however, that these formulae were not based upon data and needed to be corrected as relevant data became available.

Data has now been made available by the Washington Pre-College Testing Program from which can be derived the figures needed for directly computing the AI either from SAT or ACT scores. However, before describing the procedures used it would be useful to briefly acquaint readers with the contents of these two tests. The SAT is a multiple choice examination comprised of two sections, one verbal (V) and the other mathematical (M). Scores are reported for each section and range from 20 to 80. Therefore, the range of the sum of the SAT-verbal and -mathematical sections would be 40 to 160 (College Entrance Examination Board, Note 4). The ACT is composed of four subtests: English Usage,

Mathematical Usage, Social Studies Reading, and Natural Science Reading. Scores from these four subtests are averaged to produce a Composite Score. The range of all five scores is 0 to 36 (The American College Testing Program, Note 5).

A group of Washington State HS students took both the SAT and WPC in 1975 (N = 2,880). For this group, separate percentile distributions were made for the WPC (VC + QC) and for the SAT (V + M). Pairs of scores, one each from the SAT and WPC, could then be obtained for the 5th, 10th, 15th, 20th, etc., percentiles. After plotting the points representing these pairs on a graph, a linear

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Insert Table 1 and Figure 1 about here

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relationship between the SAT and WPC was found. Next, this line of best fit which predicted each WPC score from its equivalent SAT score was drawn. Substituting for WPC (VC + QC) in the above equation resulted in the following formula

AI = (15.8)(overall HS GPA) + (0.23) (SAT V + M) - (4.39).

Similarly, a unique equation which predicted the AI from the ACT Composite Score was derived. This data was based upon the WPC and ACT test scores of 262

Insert Table 2 and Figure 2 about here

Washington State HS juniors and seniors tested in 1975. The equation for computing the UW AI from the ACT is

AI = (15.8)(overall HS GPA) + (0.99)(ACT Composite Score) - (3.99).

With the aid of these three formulae the UW Admission's Office and HS counselors will be able to more accurately compute a HS student's UW AI. It is expected that as UW performance data become available for numbers of students entering with SAT or ACT scores test score "equivalence" may be studied in terms of equivalence of University performance.

Reference Notes

1. Lenneborg, C. E. Summarization of empirical findings on new freshman admissions index (Project Report # 254 and 255). Seattle: University of Washington, Educational Assessment Center, January 1974.

2. Washington Pre-College Testing Program. WPC career planner. Seattle: Author, 1974.

3. de Wolf, V. A. Washington Pre-College test norms and admission's index data for University of Washington freshmen entering Autumn 1974 (Project Report # 277). Seattle: University of Washington, Educational Assessment Center, May 1975.

4. College Entrance Examination Board. About the SAT. Princeton, NJ: College Board Admissions Testing Program, 1975.

5. The American College Testing Program. Using ACT on the campus. Iowa City, Iowa: ACT Publications, 1975.

Table 1. Percentile equivalents of WPC (VC + QC) and SAT (V + M) scores.

Percentile	WPC(VC + QC)	SAT(V + M)
5	83.1	71.1
10	89.9	77.8
15	94.2	82.3
20	97.7	85.7
25	100.9	89.3
30	103.8	92.3
35	106.5	95.0
40	109.0	97.7
45	111.3	100.3
50	113.3	103.0
55	115.5	105.6
60	117.7	107.7
65	119.7	110.5
70	121.6	113.4
75	124.1	116.2
80	126.7	119.5
85	129.3	123.4
90	132.2	127.5
95	136.1	134.8

Note. These scores were based upon the test results of 2,880 Washington State high school juniors and seniors who took both the Washington Pre-College Test, Form C, and the Scholastic Aptitude Test in 1975.

Table 2. Percentile equivalents of WPC(VC + QC) and ACT Composite scores.

Percentile	WPC(VC + QC)	ACT Composite
5	72.6	13.2
10	81.9	15.2
15	87.0	16.5
20	91.9	17.9
25	95.9	18.8
30	100.1	19.8
35	102.2	20.6
40	104.1	21.5
45	108.5	22.6
50	110.6	23.1
55	112.6	23.7
60	114.1	24.6
65	116.5	25.4
70	119.2	26.0
75	121.7	26.6
80	124.3	27.4
85	127.3	28.1
90	131.5	28.9
95	134.5	30.1

Note. These scores were based upon the test results of 262 Washington State high school juniors and seniors who took both the Washington Pre-College Test, Form C, and the American College Test in 1975.

Figure 1. Plot of the WPC(VC + QC) and SAT(V + M) pairs given in Table 1 and the line of best fit.

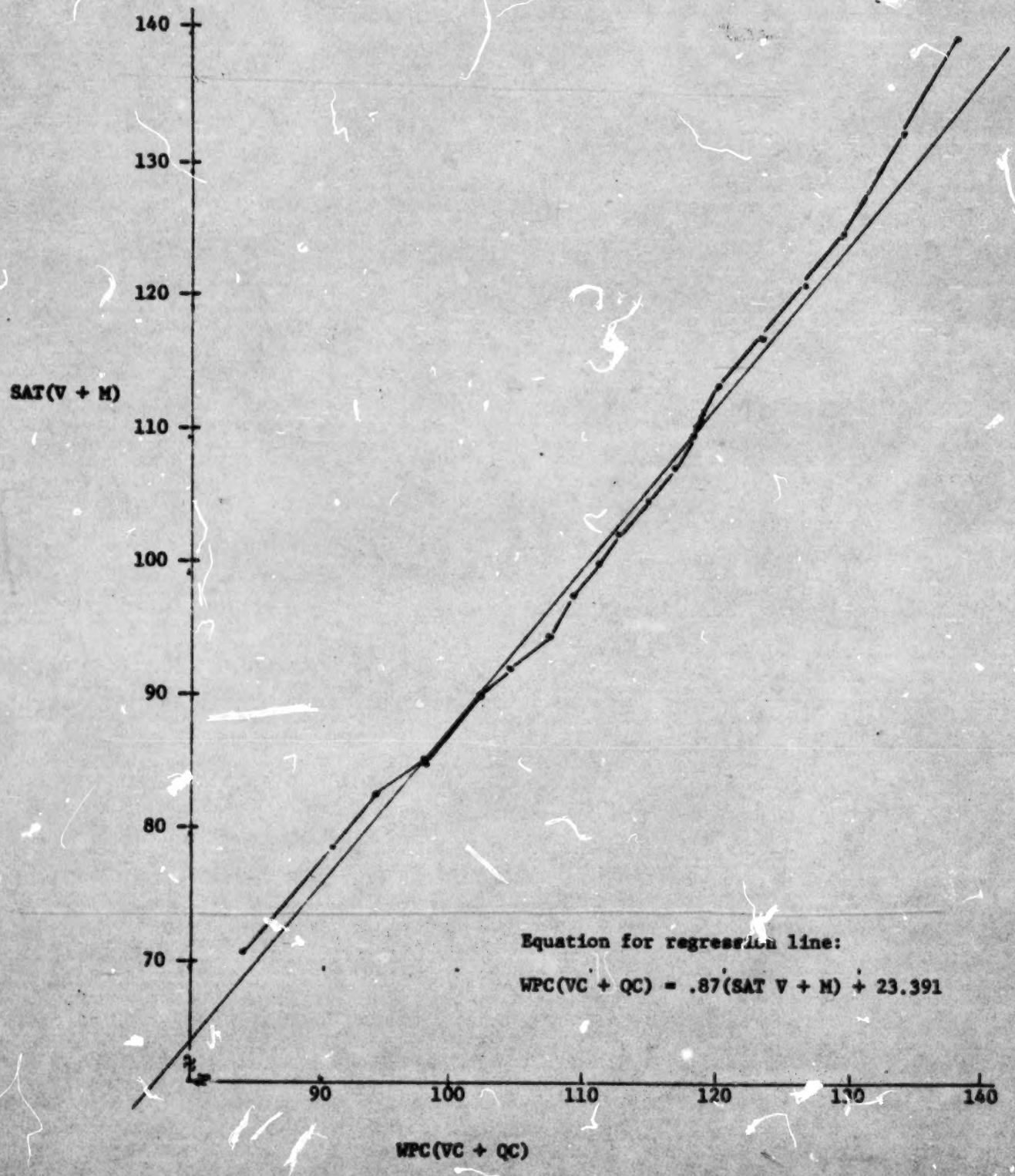

Figure 2. Plot of the WPC(VC + QC) and ACT Composite pairs given in Table 2 and the line of best fit.